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EXAMINER

GUTMAN, HILARY L

ART UNIT PAPER NUMBER

3612

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/648,757

Applicant(s)

GLASGOW ET AL.

Examiner

Hilary Gutman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 August 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-77 is/are pending in the application.
- 4a) Of the above claim(s) 23,30-35,41-43,48-60,65,67,70,71 and 77 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 44-47 is/are allowed.
- 6) ☒ Claim(s) 1-19,24-29,36-40,61-64,66,68,69,72 and 76 is/are rejected.
- 7) ☒ Claim(s) 20-22 and 73-75 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/18/03 & 8/19/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Claims 23, 30-35, 41-43, 48-60, 65, 67, 70-71, and 77 are hereby withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 8/19/04.

With regard to claims 23 and 30, it has come to the examiner's attention that these claims do not read on the elected species and are hereby withdrawn.

2. Applicant's election with traverse of species II in the reply filed on 8/19/04 is acknowledged. The traversal is on the ground(s) that claims 41-43, 57-60, 70-71 are generic; claims 48-56 are generics; claim 65 is generic; claim 67 belongs with species II; and claim 77 is generic. This is not found persuasive because claims 41-43, 57-60, 70, and 71 are drawn to species IV; claims 48-56 and 65 are drawn to species I; claim 67 recites limitations not drawn to the elected species II (specifically, that the end portion with the one smaller radius is configured to initiate a telescoping rolling of the tube section); and claim 77 recites limitations not drawing to species II (specifically that the second tube section is thicker than the first tube section).

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information

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submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the insert of claim 23; the vehicle frame of claim 25; the cross car frame of claim 26; and the circular cross section at one location and rectangular cross section at another location of one of the first and second tube sections of claim 30; and the second tube section being thicker than the first tube section of claim 77 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified

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and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

6. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Objections

7. Claims 1, 62-63, and 72 are objected to because of the following informalities:

In claim 1, on line 14, "the" should be inserted before "impact".

In claim 62, line 2, "an" should be "the".

In claim 63, line 2, "an" should be "the".

In claim 72, line 2, "third" should be deleted and "piece1" should be "piece".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 2-4, 6, 13, and 37-39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, lines 2-3, the specific yield strength should be set forth, not “as set forth by the American Society of Testing and Materials”, since the standards may change.

With regard to claims 2, 13, and 37, the recitation that the first, second, and intermediate tube sections have different properties is unclear since no relationship or comparison is made to how the properties differ and from what the properties differ. If the sections differ in properties from each other a statement and recitation to this affect should be made for clarity.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 17-19, 24-27, 36, 61-64, 66, 68-69, and 72 are rejected under 35 U.S.C. 102(b) as being anticipated by DE ‘164.

For claim 1, DE (4,316,164) discloses an energy management tube adapted to reliably and predictably absorb substantial impact energy when impacted longitudinally, comprising: a

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first tube section 3; a second tube section 4 aligned with the first tube section; and an intermediate tube section 2, 12 with first and second end portions integrally connecting the first and second tube sections, respectively (Figures 1 and 3), the first and second tube sections being dimensionally different in size and the intermediate tube section having a shape transitioning from the first tube section to the second tube section; the first tube section 3 being larger in size than the second tube section 4 and including an outer surface defining a tubular boundary, the first end portion including a continuous band of deformed material flared outward radially beyond the outer surface (Figure 3) and which acts to support and maintain a columnar strength of the first tube section upon longitudinal impact, the second end portion contrastingly being configured to initiate a telescoping rolling of the second tube section during impact as the first tube section maintains its columnar strength.

With regard to claim 2, the first, second, and intermediate tube sections are apparently formed or can be inherently formed from a single sheet of material.

With regard to claim 3, the intermediate tube section and also one of the first and second tube sections are heat-treated.

With regard to claim 17, the first, second, and intermediate tube sections are formed longitudinally.

With regard to claim 18, at least one of the first, second, and intermediate tube sections are formed in part by to have reduced sizes (specifically the second tube section 4 which is smaller than the first tube section 3).

With regard to claim 19, the intermediate tube section has a pre-set shape, with the first and second end portions at least partially overlapping.

Furthermore with regard to claims 17-19, it should be noted that the patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. (MPEP 2113).

With regard to claims 24-26, the energy management tube can be attached to a vehicle chassis or frame 8 as well as a bumper beam 6. One can further envision this structure attached to a cross car frame member (such as transverse pipes 7).

With regard to claim 27, the first and second tube sections have similar geometric cross sectional shapes, but are different cross-sectional sizes.

With regard to claim 29, at least one of the first and second tube sections includes a round cross section.

For claim 36, DE '164 discloses an energy management tube adapted to reliably and predictably absorb substantial impact energy when impacted longitudinally, comprising: a first tube section 3; a second tube section 4 aligned with the first tube section; and an intermediate tube section 2, 12 with first and second end portions integrally connecting the first and second tube sections, respectively, the first tube section 3 being dimensionally larger in size than the second tube section 4 and the intermediate tube section 2, 12 having a shape transitioning from the first tube section to the second tube section, the intermediate section forming a continuous ring and, when cross sectioned longitudinally (Figure 3), being a non-linear wall segment where the first end portion defines a first radius on the wall segment and the second end portion defines a second radius on the wall segment, one of the first and second radii being smaller than the other radii, the end portion with the one smaller radius providing a relatively greater support for

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columnar strength than the end portion with the other larger radius; the end portion with the other larger radius being configured to initiate a telescoping rolling of the tube section with the larger radius; whereby, upon undergoing a longitudinal impact, the intermediate tube section and the second tube section roll predictably and sooner than the first end portion and sooner than the first tube section upon the intermediate section receiving forces from the longitudinal impact.

For claim 61, DE '164 discloses a shock absorber comprising a smaller-diameter tube portion 4 and a larger-diameter tube portion 3 integrally formed by partially reducing or partially enlarging a plastically deformable straight tube and a step portion 2, 12 that joins the smaller-diameter tube portion and the larger-diameter tube portion, wherein: both a folded-back portion of the smaller-diameter tube portion and a folded-back portion of the larger-diameter tube portion, as joining to each other through the step portion, have a circular arc-shaped section with an arcuate angle more than 90 degrees (Figure 3); and the step portion is formed to have an S-shaped section by joining the folded-back portion of the smaller-diameter tube portion and the folded-back portion of the larger-diameter tube portion.

With regard to claim 62, the step portion is formed to have an S-shaped section, in which the radius of the circular arc-shaped section of the folded-back portion of the smaller-diameter tube portion is made smaller than that of the circular arc-shaped section of the folded-back portion of the larger-diameter tube portion.

With regard to claim 63, the step portion is formed to have an S-shaped section by joining the folded-back portion of the smaller-diameter tube portion and the folded-back portion of the larger-diameter tube portion through an annular side surface.

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For claim 64, DE '164 discloses an energy management tube adapted to reliably and predictably absorb substantial impact energy when impacted longitudinally comprising: a first tube section 4 having a first resistance to deformation; a second tube section 3 having a second resistance to deformation, the second resistance to deformation being greater than the first resistance to deformation; and an intermediate tube section 2, 12 connecting the first tube section to the second tube section; whereby, upon undergoing a longitudinal impact F, the intermediate tube section and the first tube section roll predictably and sooner than the second tube section upon the intermediate tube section receiving forces from the longitudinal impact.

With regard to claim 66, the intermediate tube section 2, 12 includes first and second end portions integrally connecting the first and second tube sections, respectively, to the intermediate tube section.

With regard to claim 68, a first transition between the first end portion and the first tube section is at a first angle and a second transition between the second end portion and the second tube section is at a second angle, the first angle being different than the second angle.

With regard to claim 69, the first angle is smaller than the second angle.

With regard to claim 72, the first, second and intermediate tube sections are apparently formed or can inherently be formed from a single piece of material.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 2-3, 5, 9-10, and 37-38, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claims 1 and 36 above and in view of McLauchlan.

With regard to claims 2 and 37, the first, second, and intermediate tube sections are apparently formed or can be inherently formed from a single sheet of material.

DE '164 does not disclosed the specific material of the first, second, and intermediate tube sections and further lacks specifically that these sections are made from heat-treated steel.

McLauchlan (3,773,373) teaches bumper assemblies made out of heat-treated steel which strongly resists compressive forces and possesses adequate resilience for the desired characteristics of the bumper assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the tube sections of DE '164 out of heat-treated steel as taught by

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McLauchlan in order to provide the shock absorber of DE '164 with good resistive qualities to best absorb an impact force.

With regard to DE '164, as modified and claims 2 and 37, at least one of the first, second, and intermediate tube sections are heat-treated to include different material properties. Specifically when the steel is heat-treated it can take on different material properties as compared with steel which is not heat-treated.

With regard to DE '164, as modified, and claims 3 and 38, the intermediate tube section and also one of the first and second tube sections are heat-treated.

With regard to DE '164, as modified, and claim 5, the first, second, and intermediate tube sections are made from steel.

With regard to DE '164, as modified, and claim 9, the first, second, and intermediate tube sections are made from a heat treatable grade of material.

With regard to DE '164, as modified, and claim 10, the material in at least one of the first, second, and intermediate tube sections is heat-treated.

With regard to DE '164, as modified, and claim 74, the intermediate tube section is heat treated.

15. Claims 11-13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claim 1 above and in view of Ebbinghaus.

DE '164 does not disclosed the specific material of the first, second, and intermediate tube sections and further lacks specifically that these sections are made from annealed steel.

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Ebbinghaus (5,403,049) teaches an impact absorber made out of annealed steel which exhibits a low yield stress, a high deformability, and a suitable strength for impacts.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the tube sections of DE '164 out of annealed steel as taught by Ebbinghaus in order to provide the shock absorber of DE '164 with good impact absorbing qualities.

With regard to DE '164, as modified, and claim 11, the first, second, and intermediate tube sections are made from (material is) an annealable grade of material.

With regard to DE '164, as modified, and claim 12, the material in at least one of the first, second, and intermediate tube sections is annealed.

With regard to DE '164, as modified, and claim 13, the material in at least two of the first, second, and intermediate tube sections are annealed to have different material properties, including annealing the intermediate tube section.

With regard to DE '164, as modified, and claim 75, the second tube section and the intermediate tube section are annealed.

16. Claims 40 & 76 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claims 36 and 64 above (respectively) and in view of McLauchlan.

DE '164 does not disclosed the specific material of the first, second, and intermediate tube sections and further lacks specifically that these sections are made from steel.

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McLauchlan (3,773,373) teaches bumper assemblies made out of heat-treated steel which strongly resists compressive forces and possesses adequate resilience for the desired characteristics of the bumper assembly.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the tube sections of DE '164 out of steel as taught by McLauchlan in order to provide the shock absorber of DE '164 with good resistive qualities to best absorb an impact force.

With regard to DE '164, as modified, and claim 40, the first, second, and intermediate tube sections are made from steel.

With regard to DE '164, as modified, and claim 76, the first tube section, the second tube section and the intermediate tube section are made from steel.

17. Claims 5-8 and 14-16, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claim 1 above and in view of Stewart et al.

DE '164 lacks the first, second, and intermediate tube sections being made from high strength low alloy steel or of an ultra-high-strength steel.

Stewart et al. (5,080,410) teach the use of high strength and ultra-high-strength steel bumpers frequently alloyed with other constituents. This type of material is used for applications where high strength is needed. Such steel has a minimum yield strength of 100 KSI and has greater spring back and reduce ductility.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the tube sections of DE '164 out of an ultra-high-strength steel as

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taught by Stewart et al. in order to provide an absorber with greater strength and reduced ductility.

With regard to DE '164, as modified, and claim 5, the first, second, and intermediate tube sections are made from steel.

With regard to DE '164, as modified, and claim 6, as best understood, the first, second, and intermediate tube sections are made from a material having a yield strength of structural steel.

With regard to DE '164, as modified, and claim 7, the first, second, and intermediate tube sections are made from a material having a yield strength of at least about 35 KSI.

With regard to DE '164, as modified, and claim 8, the material has a yield strength of at least 80 KSI.

With regard to claim 14, the first, second, and intermediate tube sections are made from a material having properties at least equal to the yield, tensile and elongation properties of a structural steel, since DE '164, as modified, discloses the material being an ultra-high-strength steel.

18. Claims 2-4 and 11-13, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claim 1 above and in view of Cantrell.

DE '164 discloses the limitations of the claimed invention but lacks the first, second and intermediate tube sections being heat-treated to include different material properties wherein the intermediate tube section and also one of the first and second tube sections are heat-treated and wherein the intermediate tube section and the one tube section are also annealed.

Cantrell (3,905,630) teaches a bumper bar or impact resistant bumper that can be furnace hardened. However, when a bumper bar is furnace heated and subsequently quenched, distortions may occur requiring annealing and straightening of the bumper bar to relieve these distortions.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have created the intermediate tube section and the first and second tube sections of DE '164 by heat-treating and annealing steel as taught by Cantrell in order to provide an absorber with greater strength and reduced ductility and diminished distortions.

19. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over DE '164 as applied to claim 1 above and in view of Kitagawa (5,868,457).

DE '164 lacks at least one of the first and second tube sections including a rectangular cross section.

Kitagawa teaches a structural member having a first tube section of rectangular cross section, a second tube section of generally circular (or octagonal) cross section; and an intermediate tube section therebetween.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided one of the first and tube sections of DE '164 to be of a rectangular cross section as taught by Kitagawa in order to affect the impact absorbing characteristics of the impact absorber without materially changing the tube section.

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Allowable Subject Matter

20. Claims 44-47 are allowed.

21. Claims 20-22 and 73-75 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hilary Gutman whose telephone number is 703-305-0496.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Dayoan can be reached on 703-308-3102. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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24. **Any response to this action should be mailed to:**

Assistant Commissioner for Patents

Washington, D.C. 20231


or faxed to:

(703) 872-9326, (for formal communications intended for entry)

or:

(703) 746-3515, (for informal or draft communications, please clearly label

“PROPOSED” or “DRAFT”).


Hilary Gutman

September 16, 2004